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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,613	10/24/2003	Jian He	15436.249.34.1	6482

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EXAMINER

KANG, JULIANA K

ART UNIT PAPER NUMBER

2874

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/693,613

Applicant(s)

HE ET AL.

Examiner

Juliana K. Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claim 10 is objected to because of the following informalities: claims 10 recites only one lens that is coupled to both the input polarization maintaining fiber and first and second output fibers. This appears to be incorrect. As shown in Fig. 3 there are two separate lenses for the input fiber and output fibers. For the examining purpose, the Examiner will assume that there are two lenses as shown in Fig. 3. Appropriate correction or explanation is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4 and 10-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Kokkelink et al (U.S. Patent 6,529,325 B1).

Kokkelink et al disclose an optical coupler comprising: an input polarization maintaining optical fiber (32, thus inherently has a polarization axis); output fibers (44,46) that can be of the single mode type or polarization maintaining type (see column 3 lines 25-28); a polarization beam splitter (30) comprised of two birefringent wedges

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made of lithium niobate, rutile or yttrium vanadate (see column 2 lines 55-58) and lenses (36, 42) optically coupled to the input polarization maintaining fiber and first and second output fibers. Kokkelink et al disclose that the adjusting the angle between the input and output beams by rotating wedges (see column 3 lines 52-55) to reduce insertion loss and this inherently changes a coupling ratio.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11, 14, 15, 20-26 and 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokkelink et al.

As described above Kokkelink et al disclose the claimed invention except rotating fibers to change coupling ratio. Since Kokkelink et al teach adjusting the angle between the fiber and second output beams for loss insertion by rotating the wedges, adjusting the input fiber or output fibers (see claims 7, 13 and 15 of Kokkelink et al), rotating fibers would also have been obvious to one with ordinary skill in the art at the time the invention was made for optimum coupling efficiency.

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6. Claims 5-7, 9, 16-17, 19, 23, 27-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokkelink et al and further in view of Hellman et al (U.S. Patent 6,782,146 B2).

As described above Kokkelink et al disclose the claimed structure of the invention except a ferrule, a housing for the ferrule and a lens and the fiber end cut in an angle of between about 5 degrees and 15 degrees. Hellman et al teach a polarization beam splitter comprising optical fibers placed in a ferrule and a housing, lenses placed within the housing and the angled fiber ends (see column 1 lines 44-61). The ferrule and housing provides protection for the optical elements and the angled end of fibers improve coupling efficiency. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Hellman et al in Kokkelink et al for protection and optimum coupling efficiency.

7. Claims 8, 18 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokkelink et al and Hellman et al (U.S. Patent 6,782,146 B2) and further in view of Cheng (U.S. Patent 6,292,604 B1).

Kokkelink et al and Hellman et al do not teach the claimed angle for the fiber end. Cheng teach slanted the fiber end having an angle between 2 to 15 degrees (see column 2 lines 45-56) to reduce back reflections. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use teaching of Cheng in Kokkelink et al and Hellman et al to reduce the back reflections for optimum coupling efficiency.

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Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Teng et al (U.S. Patent 6,411,749 B2) and Huang et al (U.S. Patent 6,331,913 B1) teach a polarization combiner/splitter.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (571) 272-2348. The examiner can normally be reached on Mon. & Thur. 10:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JULIANA KANG
PRIMARY EXAMINER

Juliana Kang
9/22/05